Imaging Knowledge Center

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Welcome to the Imaging Knowledge Center

The caBIG® Imaging Knowledge Center (Imaging KC) is an NCI-supported entity led by the Maryland Imaging Research Technologies Laboratory at the University of Maryland School of Medicine. The Imaging KC provides a centralized, authoritative repository of knowledge, information, and Web-based support to facilitate the deployment and ongoing development of caBIG® tools, standards, and infrastructure in the medical imaging domain. Key services provided by the Knowledge Center include:

- Providing domain expertise on using the supported tools to carry out imaging research and analysis;
- Posting up-to-date installation packages for related tools;
- Maintaining technical and end-user documentation;
- Fostering open source development of caBIG® tools by the community; and
- Collecting and monitoring defect reports, feature requests, and end-user requirements.

For first-time visitors

To participate in the Imaging KC forum by posting or adding entries into the defect tracking and feature request system, create a free account.

After receiving your account credentials, you can post messages to the forums. To receive e-mail notification when responses to your posts are made, simply click the "subscribe forum" or "subscribe topic" link at the bottom of the page.

If you have been using other e-mail lists for the tools associated with the Imaging KC and listed below, please be advised that forums hosted by this knowledge center will gradually become the main vehicle for your comments and questions on the tools. The e-mail lists will be used mainly for community announcements. Please let us know about your experience with this new channel of communication by selecting the Feedback link.

What's New?

Visit the news page for the latest announcements and details about new software releases:

- National Biomedical Imaging Archive 5.0.2 was released on 4/25/2011
- Algorithm Validation Toolkit (AVT)2.0 was released on 12/4/2010
- Annotation Imaging Markup (AIM)Data Model and Toolkit 3.0 was released on 10/10/10

Visit caBIG® Imaging in Recent Publications for additional news and information.

Learn about and Access Tools

The following software tools are currently supported by the Imaging Knowledge Center. Links are provided to helpful resources including a summary tool landing page that provides an overview of the tool with links to resources, wiki pages with additional information about the tool, forums to post questions or comments, a bug tracker and feature request system, and the developer's code repository.

National Biomedical Imaging Archive (NBIA)

The National Biomedical Imaging Archive (NBIA) is a free and open source service and software application that enables users to securely store, search, and download diagnostic medical images. Along with the Clinical Trial Processor software from the Radiological Society of North America, it supports customized de-identification of images. NBIA is able to integrate with other caBIG® applications to cull various data types, such as image annotations, clinical data, genomic data, and other research files, such as RT objects. It can also federate with other instances of NBIA to support the response of multiple NBIA servers to a single query. CBIIT¹s hosted instance of NBIA is freely available and provides researchers and clinicians with a robust DICOM archive that can securely share and access images to enhance scientific research and support clinical decision making. Anyone can deploy a local node of NBIA and, using caBIG's caGrid infrastructure, securely share data across the grid. Visit the National Biomedical Imaging Archive (NBIA) page for more information.

Annotation Imaging Markup (AIM)

AIM is the first project to propose/create a "standard" means of adding information/knowledge to an image in a clinical environment in order to create a future in which image content can be easily and automatically searched. AIM provides a solution to the following current imaging challenges: no agreed upon syntax for annotation and markup, no agreed upon semantics to describe annotations, and no standard format (DICOM, XML, HL7, etc.) for annotations and markup. The solution is made up of various components, including the AIM Model, AIM Template Service, and AIM Data Service. The AIM Model captures the descriptive information of an image with user-generated graphical symbols placed on the image into a single common information source. The AIM Template Service allows the user to generate a set of well-defined questions and answer choices to facilitate collecting the annotations and markup of an image in a XML document. The AIM Data Service then stores the XML documents in a database via caGrid. Visit the Annotation Imaging Markup (AIM) page for more information.

In Vivo Imaging Middleware (IVIM) Virtual PACS

The page In Vivo Imaging Middleware (IVIM) Virtual PACS does not exist. Visit the In Vivo Imaging Middleware (IVIM) and Virtual PACS page for more information.

eXtensible Imaging Platform (XIP)

The eXtensible Imaging Platform offers a set of tools for rapidly developing medical imaging processing and visualization applications. One of the goals for XIP is to allow cancer researchers to easily create complex data analysis programs (e.g., lesion change detection) targeted at specific investigations. By employing the DICOM WG-23 Application Hosting interfaces, XIP applications can be distributed to a variety of installations, thus providing more consistency in data collection for clinical trials. The XIP tools can also be employed to create other types of applications. Visit the eXtensible Imaging Platform (XIP) page for more information.

Algorithm Validation Toolkit (AVT)

The Algorithm Validation Toolkit provides tools to support medical image measurement validation research. The goal of AVT is to provide the caBIG® community with free and open technologies to support image measurement in research. AVT can be utilized in conjunction with caGrid in such a way that when image data associated with a published (or nonpublished) research study is made available on the caGrid, another researcher can more readily replicate the experiment for validation and/or extension of that research. Visit the Algorithm Validation Toolkit (AVT) page for more information.

Imaging Workstations

Two free and open-source imaging workstations are utilized to facilitate imaging visualization. The ClearCanvas and the Osirix workstations were selected allowing both Windows and Mac users imaging visualization functionalities.

For more information on the ClearCanvas workstation, please see the caBIG® tool summary page for AIM on ClearCanvas® Workstation.

For more information on the AIM plug-in for the Osirix workstation, please see the iPad Tool Page.

Visit the Imaging Workstations page for more information.

Integration of Tools

There is extensive integration among tools within the imaging workspace and with tools from other workspaces. For example, the ClearCanvas workstation can retrieve imaging and associated data directly from the NBIA hosted at the National Cancer Institute. The user can then upload an AIM template, created using the AIM template service, to annotate and mark up the images. Once the annotation and markup is finished, the AIM data can be submitted and stored in the AIM data service. Then, through use of caIntegrator2 from the Integrative Cancer Research workspace, the AIM data can be queried and analyzed. To learn how to use these tools together, please see individual tool wiki pages as well as the forums (End Users forum and Developers forum) dedicated to the integration of these tools.

Access to these pages and forums is available through the other Knowledge Centers.

Refer also to caBIG Case Study.

Visit the Imaging Knowledge Center Forums

This Forum allows visitors to submit questions and comments that are beyond the scope of any specific tool but that are within the domain addressed by the Imaging Knowledge Center. In addition to responding to queries, the Imaging Knowledge Center team will bring relevant queries and comments to the attention of appropriate stakeholder groups, such as the Imaging Workspace.

Related Links

- Imaging Workspace (On caBIG® Community Website)
- Support Service Provider Listing (On caBIG® Community Website)
- caBIG® Community Website